wherein aa1 is no amino acid, I, K or T;

RNB-5D peptide is YVSIDVTLQQLE, or a variant thereof in which one or more amino acids has been replaced by K,
aa2 is no amino acid, S or K;
aa3 is no amino acid, H or K
which is capable of binding to an MHC molecule *in vitro* and being presented to a T cell without antigen processing.

In this example ~~embodiment~~, the RNB-5D peptide may be YVSIDVTLQQLE, or a variant thereof in which one, two or three amino acids is/are replaced by K.

The peptide may be selected from the following group, which are all identified as being apitopes (Table 1) : KKGIYVSIDVTLQQLESHGKK (SEQ ID No 12), KKGKYVSIDVTLQQLESHGKK (SEQ ID No 22), KKGIKVSIDVTLQQLESHGKK (SEQ ID No 23), KKGIYKSIDVTLQQLESHGKK (SEQ ID No 24), KKGIYVSIDVKLQQLESHGKK (SEQ ID No 25), KKGIYVSIDVTLQKLESHGKK(SEQ ID No 26), KKGIYVSIDVTLQQKESHGKK (SEQ ID No 27), KKGIYVSIDVTLQQLKSHGKK (SEQ ID No 28), KKGIYVSIDVTLQQLEKHGKK (SEQ ID No 29), KKGIYVSIDVTLQQLESKGKK (SEQ ID No 30), KKGYVSIDVTLQQLEGKK (SEQ ID No 31), KKGYVSIDVKLQQLEGKK (SEQ ID No 32), KKGYVSIDVTLQKLEGKK (SEQ ID No 33), KKGYVSIDVTLQQKEGKK (SEQ ID No 34), KKGYVSIDVKLQKKEGKK (SEQ ID No 35), KKGIYVSIDVTLQQLEGKK (SEQ ID No 36), KKGIYVSIDVKLQQLEGKK (SEQ ID No 37), KKGIYVSIDVTLQKLEGKK (SEQ ID No 38), KKGIYVSIDVTLQQKEGKK (SEQ ID No 39), KKGIYVSIDVKLQKKEGKK (SEQ ID No 40), KKGTYVSIDVTLQQLEGKK (SEQ ID No 41), KKGTYVSIDVKLQQLEGKK (SEQ ID No 42), KKGTYVSIDVTLQKLEGKK (SEQ ID No 43), KKGTYVSIDVTLQQKEGKK (SEQ ID No 44), KKGTYVSIDVKLQKKEGKK (SEQ ID No 45), KKKIYVSIDVTLQQLESHKKK (SEQ ID No 21), KKKKYVSIDVTLQQLESHKKK (SEQ ID No 46), KKKIKVSIDVTLQQLESHKKK (SEQ ID No 47), KKKIYKSIDVTLQQLESHKKK (SEQ ID No 48), KKKIYVKIDVTLQQLESHKKK (SEQ ID No 49), KKKIYVSIDVKLQQLESHKKK (SEQ ID No 50), KKKIYVSIDVTLKQLESHKKK (SEQ ID No 51), KKKIYVSIDVTLQKLESHKKK (SEQ ID No 52), KKKIYVSIDVTLQQKESHKKK (SEQ ID No 53), KKKIYVSIDVTLQQLKSHKKK (SEQ ID No 54), KKKIYVSIDVTLQQLEKHKKK (SEQ ID No 55), KKKIYVSIDVTLQQLESKKKK (SEQ

In a third aspect, the present invention provides a peptide according to the first aspect of the invention, or a composition according to the second aspect of the invention, for use in supressing or preventing the production of TSHR autoantibodies *in vivo*.

In a fourth aspect, the present invention provides a peptide according to the first aspect of the invention, or a composition according to the second aspect of the invention, for use in treating and/or preventing Graves' Disease in a subject.

The ~~In a fifth aspect, the~~ present disclosure ~~invention~~ provides the use of a peptide according to the first aspect of the invention, or a composition according to the second aspect of the invention, in the manufacture of a medicament to suppress or prevent the production of TSHR autoantibodies *in vivo*.

In a fifth aspect, the present invention provides the use of a peptide according to the first aspect of the invention, or a composition according to the second aspect of the invention, in the manufacture of a medicament to suppress or prevent the production of TSHR autoantibodies in vivo, wherein said peptide or composition is to be administered to the subject.

The ~~In a sixth aspect, the~~ present disclosure ~~invention~~ provides use of a peptide according to the first aspect of the invention, or a composition according to the second aspect of the invention, in the manufacture of a medicament to treat and/or prevent Graves' Disease.

In a sixth aspect, the present invention provides the use of a peptide according to the first aspect of the invention, or a composition according to the second aspect of the invention, in the manufacture of a medicament to treat and/or prevent Graves' Disease in a subject, wherein said peptide or composition is to be administered to the subject.

The ~~In a seventh aspect, the~~ present disclosure also ~~invention~~ provides a method for suppressing or preventing the production of TSHR autoantibodies in a subject, which comprises the step of administration of a peptide according to the first aspect of the invention, or a composition according to the second aspect of the invention, to the subject.

The ~~In an eighth aspect, the~~ present disclosure also ~~invention~~ provides a method for treating Graves' Disease in a subject which comprises the step of administration of a peptide according to the first aspect of the invention, or a composition according to the second aspect of the invention, to the subject.

The subject may be HLA-DR3 or HLA-DR4.

DETAILED DESCRIPTION

PEPTIDES

In a first aspect, the present invention relates to a peptide.

The term "peptide" is used in the normal sense to mean a series of residues, typically L-amino acids, connected one to the other, typically by peptide bonds between the α-amino and carboxyl groups of adjacent amino acids. The term includes modified peptides and synthetic peptide analogues.

10. A peptide according to any of claims 1 to 8, or a composition according to claim 9, for use in supressing or preventing the production of TSHR autoantibodies *in vivo*.

11. A peptide according to any of claims 1 to 8, or a composition according to claim 9, for use in treating and/or preventing Graves' Disease in a subject.

12. The use of a peptide according to any of claims 1 to 8, or a composition according to claim 9, in the manufacture of a medicament to suppress or prevent the production of TSHR autoantibodies *in vivo*, wherein said peptide or composition is to be administered to the subject.

13. The use of a peptide according to any of claims 1 to 8, or a composition according to claim 9, in the manufacture of a medicament to treat and/or prevent Graves' Disease in a subject, wherein said peptide or composition is to be administered to the subject.

~~14. A method for supressing or preventing the production of TSHR autoantibodies in a subject, which comprises the step of administration of a peptide according to any of claims 1 to 8, or a composition according to claim 9, to the subject.~~

~~15. A method for treating Graves' Disease in a subject which comprises the step of administration of a peptide according to any of claims 1 to 8, or a composition according to claim 9, to the subject.~~

14.~~16.~~ The use ~~A method~~ according to claim 12 or 13~~-14 or 15~~, wherein the subject is HLA-DR3.

15.~~17.~~ The use ~~A method~~ according to claim 12 or 13~~-14 or 15~~, wherein the subject in HLA-DR4.